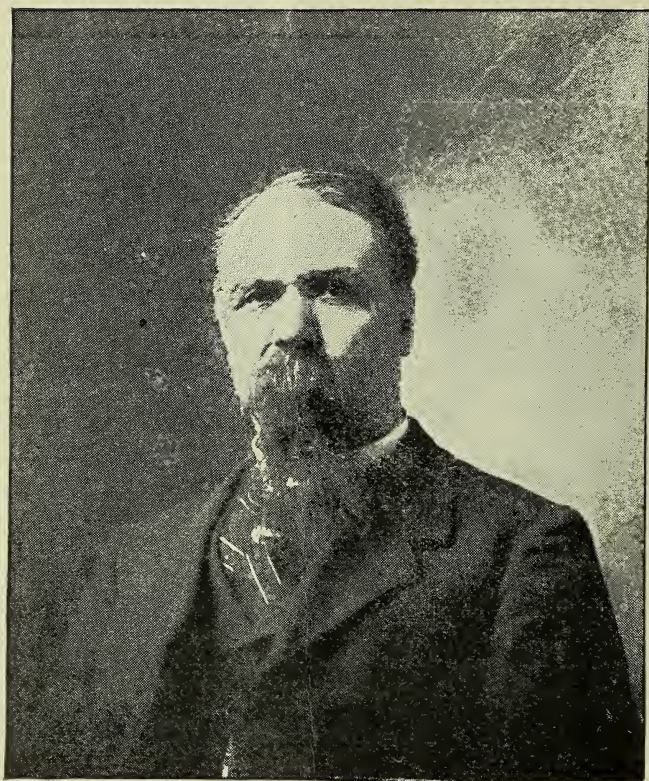


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PROF. F. H. KING,
UNIVERSITY OF WISCONSIN.

[See page 124.]

THE AGRICULTURAL STUDENT.

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EDITORIAL CHAT.

Judging from the small attendance at the annual meeting of the Agricultural Students' Union, which was held in Townshend Hall the first of the year, we fear that the work of this association is not fully appreciated and that it does not receive the hearty co-operation of those who should be the most interested in its workings. The officers of the Union are certainly doing all that is in their power to encourage scientific agriculture and to foster the spirit of investigation along such lines. The Union stands ready to furnish materials and instructions free to any one who desires to conduct experiments, the only consideration imposed being a report of the result of such experiments, at the end of the season. Let the plans that you are now making for next season's work include some experiments along such lines as you are best situated to carry out. Then write to the proper official of the Union for supplies and instructions. A full list of the Directors of the various departments was given in our last issue.

We are gratified to learn that steps have been taken by the United States Forestry Department toward the establishment of scientific forestry investiga-

tions in this State. One forestry station has already been established in Hamilton county and two more are to be located within the State in a short time. The object of these stations is to ascertain what can be done, by the careful application of scientific forestry, toward replacing forests where the natural growths have been wholly or partly destroyed. After a special examiner has reported upon the proposed locations the department will make out a working plan for each and furnish the necessary instruction as to the means to be employed to grow and develop an ideal piece of forest. It is the hope of the general government that the co-operation of the people can thus be secured and the work taken up on such a large scale as to become of practical benefit.

NEWS NOTES.

C. W. Waid, '98, has resigned his position as horticulturist at New Hampshire State College to accept a similar position at the Ohio Experiment Station.

The total enrollment of the University for the second semester is 1449, an increase of more than 200 over the number at the same time last year. Of the 109 new students for the winter term, 60 are accredited to the Agricultural Department.

Professor Scovill of the Kansas Experiment Station and Dr. Russell of the University of Wisconsin were visitors at the University during the Dairymen's meeting.

H. C. Price, Assistant in Horticulture at O. S. U., has accepted the position of Dean of the College of Horticulture at Iowa State College. He will assume the duties of his new position on May 1.

FRANKLIN HIRAM KING.

Franklin Hiram King was born on a farm in Walworth county, Wisconsin, in 1848, and his boyhood was spent on the farm and in the district school.

Before the State Normal School was opened at Whitewater, Wis., his parents had moved to a farm not far from that place and he entered the Normal School, becoming specially interested in the study of the natural sciences under the teaching of Prof. Chamberlin, who has since been well known as one of the foremost geologists of the country. After his graduation in 1872 he worked and read with Prof. Chamberlin a year and joined him in work on the State Geological Survey.

He taught natural science in the high school of Berlin, Wis., three years, during which time he published a Plant Record, which was later incorporated with Wood's botanical text-books. In his vacations he undertook a study of the food habits of our native birds, the results of which were published in the report of the Wisconsin Geological Survey as Economic Relations of Wisconsin Birds. In this study the stomach contents of about 2000 birds were examined, generally with the microscope, and requiring a study of entomology to make the identifications. Part of this was done during the next two years which he spent in Cornell University, after a geological expedition for the survey of the upper Flambeau river in Northern Wisconsin.

He taught natural science in the State Normal School at River Falls, Wis., for ten years, during which time he spent one summer at the seaside laboratory of the Johns Hopkins University, and one summer in geological survey work in North Dakota, then partly unsettled and unsurveyed territory. In connection with his teaching of physical geography

he also, during this time, prepared relief maps of Wisconsin, the United States, and of the world, showing the relief of the continents and of the oceanic bottom; later he prepared one of Pennsylvania.

When the Wisconsin Experiment Station, in 1888, established the first chair of Agricultural Physics in the country, he was invited to fill it, and the fact that his former friend and instructor, Prof. Chamberlin, was at that time President of the Wisconsin University renewed their pleasant association. He still occupies this position in the growing work of the Wisconsin station.

He spent the summer of 1895 in Europe for the study of irrigation and soil problems and the next summer in the Western United States for the same purpose, and later visited the rice fields of South Carolina, where tidal irrigation is practiced.

The Farmers' Bulletin of the Department of Agriculture, Irrigation in Humid Climates, was prepared by him; also Fluctuations in the Movements of Ground Water, published by the Weather Bureau, and Principles and Conditions of the Movements of Ground Water, published by the U. S. Geological Survey. The Soil, Irrigation and Farm Drainage, and a text-book on Physics of Agriculture are his other works.

He is now undertaking a series of irrigation and soil studies under the U. S. Department of Agriculture, on sandy lands in humid climates.

THE OHIO DAIRYMEN'S ASSOCIATION.

The annual meeting of the Ohio Dairymen's Association was a decided success in every respect, the papers and discussions being most interesting and the attendance all that could be desired.

The committee on resolutions presented a number of resolutions, the most important of which was one urging the passage of the Grout Bill by the Senate and another commending the present administration of the Ohio Experiment Station and urging the Board of Control to retain the present director.

At the meeting on Thursday evening the following officers were elected for the coming year: President, L. P. Bailey, Tacoma; vice-president, E. S. Rice, Triumph; secretary-treasurer, J. S. Devol, Marietta; executive committee, J. F. Hickman and Wilson Steward; exhibit committee, F. W. Schaeffer, J. W. Decker and Elden F. Smith, all of Columbus.

The exhibits of dairy products was interesting and included 15 entries of cheese, 56 of butter and 5 of sanitary milk. All first prizes were gold medals instead of money. The secondary prizes consisted of money divided pro rata. B. B. Herrick received the gold medal for the best cheddar cheese, and H. R. Portman the medal for the finest Swiss cheese. J. M. Winters took the first prize for dairy butter and Grannis & Miller for creamery.

Secretary Miller of the State Board of Agriculture appeared before the Association and expressed the willingness of the board to provide suitable facilities, at the State fair grounds, for a splendid dairy exhibit during the next State Fair. A committee was appointed to take the matter in charge and to arrange for an exhibit that will be worthy to represent the dairy interests of the State.

CHANGES IN DAIRY METHODS.*

The dairy industry has not been backward in making changes in the past few decades. This is a fact of common ob-

* R. A. Pearson, Assistant Chief of Dairy Division, U. S. Department of Agriculture, before the Ohio Dairymen's Association.

servation and it is plainly shown by statistics. In 1860 the cheese output of the country was about 100,000,000 pounds, and only a small part of this was made in the five factories then in existence. It is estimated that the census just completed will show that the amount of cheese made in the United States has increased to 300,000,000 pounds, 85 per cent. of it being made in factories. Thus we see that in cheese making the change from farm to factory methods has been almost complete. In 1860, the butter output was nearly 460,000,000 pounds, all of which was made on farms. It is believed the last census will show the annual output of butter to have increased to 1,400,000,000 pounds, one-fifth of which was made in factories. There is yet an immense amount of farm dairy butter on our markets, and much of it is sold at a low price, which means a tremendous loss to those who make it. High grade butter is made in some farm dairies, but a large part of this class of butter, packed in various forms, is purchased by dealers for renovation.

Every dairyman is more or less familiar with changes in apparatus and methods, which have been made in his own line of work. The method of butter making has been almost revolutionized by the introduction of the centrifugal cream separator, the Babcock tester, and a new method of ripening cream.

Besides the changes in methods shown by statistics, they also prove that the industry has made a wonderful growth. It was but a few years ago that people thought good butter and good cheese could be made only in New York, Ohio, Wisconsin, and a few other districts. Today butter and cheese are made in almost all parts of the country. The Pacific Coast States, which formerly obtained their supplies from the East, now make nearly enough for their own use, and during some months export small

quantities of butter and cheese. Dairying is also becoming well established in the Southern States, where it was almost unknown but a short time ago. What better evidence of this fact is needed than the presence at your meeting of Professors Scovell and Wing from Kentucky and Georgia, an important part of whose work is to give instruction in Dairying.

Under special authorization of Congress and instruction from the Secretary of Agriculture, the Dairy Division has given considerable attention to the question, what shall we do with our surplus of dairy products, which we will soon have if the industry continues to rapidly develop? The largest dairy market in the world is in England. That country purchases about 3500 tons of butter per week, the largest part and the best part of which is supplied from Denmark. Trial shipments of United States butter were forwarded to England at short intervals during the years 1897, 1898 and 1899. There was at first considerable prejudice against our butter. The Englishman had seen butter before from the United States and judging that, they believed we could not supply a high grade article. When the experimental shipments were discontinued in 1899 some of the largest butter merchants in England were thoroughly convinced that as fine butter can be made in the United States as in any country in the world. Our butter was found to compare favorably with the Danish and a part of it was sold at retail at the same price.

One of the important lessons learned by these experimental shipments is that butter for the foreign markets must be especially made for that market. Our supplies were obtained cheaply from two or three creameries, which received careful instructions at the time the shipments were commenced and changed their methods from time to time in ac-

cordance with criticisms received from our foreign correspondents. The English market requires butter having an exceptionally good body or texture, mild flavor, little salt and little color. Two or three times our western shipments failed to arrive in time to be forwarded from New York and we substituted for that the best butter we could purchase on the New York market, paying an extra price for it. But this butter, which was substituted and which would have given excellent satisfaction in New York, was, in no case, considered the equal of what we had been getting especially made for the foreign market.

Some large companies are now arranging to regularly export butter of high quality, and there seems to be no reason to doubt that they will meet with excellent success.

Doctors Babcock and Russell, of the Wisconsin Experiment Station, have recently reported the results of some of the experiments on cheese ripening, which are of great interest to cheese makers. For the past few years, it has been the custom of some commission merchants to hold cheese at a low temperature, and the advantage of doing this has been plainly shown by two investigators named. It appears that the ripening of cheddar cheese is due to an enzyme, and this enzyme works at a low temperature. By ripening cheese in a cold room, therefore, undesirable changes due to bacteria may be avoided and the desired change will proceed slowly. Knowledge of this experiment will be of especial use to the cheese maker, who has had trouble with his curd and fears the formation of gas and other bacterial action in the cheese after it is taken from the hoop. By placing such cheese in a cold room for a month, the bacteria will be killed, and it can then be placed in a higher tem-

perature to increase the natural changes caused by the enzyme.

In connection with butter and cheese making, perhaps the greatest change of which we are in need is toward better methods of producing milk on the farm. It is well for the butter and cheese maker to be thoroughly informed along all lines for dairying and closely allied subjects. I wish it were possible for every one in Ohio to take a full four-year course at this institution and obtain a thorough knowledge of the principles and practice of breeding, feeding and caring for dairy cattle as well as the making of the butter and cheese. But this is impossible, and I wish to offer a suggestion to those who are not in a position to give all needed instruction to their patrons. It would be well for the factory man to subscribe for a number of good dairy periodicals and to obtain a small supply of bulletins on dairy subjects. The former can be had at small cost and the latter are free. These should have parts, which might be of special help to patrons, marked to attract their attention, and then they should be handed out with the request to read the marked sentences or paragraphs. A farmer will be ten times as liable to read printed matter given to him in this way as he would to hunt through a number of pages or columns for the part which would especially interest him.

With a few notable exceptions, there has recently been but little change in the method of supplying milk for city use. We think that the system of supervising city milk supply, as followed in some cities, is radically wrong. Milk consumers are often informed through the public press that certain dealers have been prosecuted for selling adulterated, preserved or otherwise impure milk and they get so much information of this kind that they are led to believe that milk

is a dangerous article of food and should be avoided as much as possible. It seems to us entirely practicable to give prominence to the well conducted dairies so that the public will also be occasionally reminded that it is possible to obtain pure milk. And in doing this, it is not necessary to lessen the vigilance over the dishonest dealers.

There is coming a decided change in the whole character of dairy work. Every year dairymen and butter and cheese makers are becoming better posted and no cause is working to this end with better results than the dairy associations and schools. The dairymen of Ohio are to be especially congratulated upon their strong and active association, and their well equipped Dairy School with its corps of most efficient professors and instructors. These agencies, which are similar to influences in other States, are helping to lift the profession to a more dignified position than it has long occupied.

HORTICULTURE FOR THE AMATEUR.

Horticulture in America readily divides itself into two distinct classes, professional or commercial horticulture and amateur or personal horticulture. In the first class it is the source of livelihood and its aim is mercenary. Its degree of success is measured by the dollars and cents it returns. This class has wide possibilities and offers liberal rewards to the man who will enter it determined to succeed, and who is endowed with a fair measure of business sagacity. But as competition becomes sharper and insect and fungus enemies more numerous commercial horticulture becomes more and more a profession in which only the man of experience and training can succeed. From this it follows that the class engaged in it will

grow smaller in proportion to the total population.

But the second class or amateur horticulture embraces those who follow it as a side issue to their other work, or as a source of recreation. It is of this class that I wish to treat briefly. Originally horticulture meant the cultivation of the land surrounding the home, which was located within the enclosure or fortification. Thus it has always been closely associated with the home and home making. But as commercial horticulture has developed until to-day single orchards embrace hundreds of acres, this idea has been often lost sight of.

While commercial horticulture must necessarily be confined to a comparatively limited class, amateur horticulture is large enough to include every one that owns a bit of ground or has means to buy a flower pot and get a little dirt to put in it. It opens its doors to all and be he farmer, lawyer, doctor, preacher, prince or serf, invites him to come in and drink of the freshness of open air and the healthfulness of manual exercise.

For the farmer who depends upon the products of his field and live stock for a livelihood, amateur horticulture offers to provide a bountiful table the year around, and yet to go over the country and look at the average farmer's garden, orchard and small fruit patch, it is astonishing to see the paucity of it. Truly there are diamonds at the door only waiting for an intelligent and willing hand to dig them up. How often the garden is not plowed till late, and then only a few vegetables planted in it. The berries that are to be found are often wild ones that nature in her generosity has raised up to supply the negligent, and the orchard is often the remains of a once flourishing one planted by an ancestor from whom the present incumbent has degenerated. On the other

hand the flourishing, thrifty farmer who is an enthusiastic amateur in heart can keep, with a little work done regularly, all the fruits and vegetables that he can use. Beginning now he would have a few stalks of rhubarb in his cellar forcing, that he might have interspersed with his apple and pumpkin pies an occasional rhubarb. His cellar would be stocked with turnips and carrats, cabbage and parsnips and potatoes. As soon as spring opens the asparagus and rhubarb beds will furnish his table, till there come radishes, lettuce, peas, beets, spinach and onions. Later the sweet corn and tomatoes and cabbage and bush beans and all of our old plants used as family tonics from the time of our grandparents.

This will be supplemented by the fruit garden with its strawberries, raspberries, blackberries, gooseberries and currants furnishing a succession throughout the season. Then the orchard with its Early Harvest and Red Astrachan, followed by the transparent of Loan and Maiden Blush, the luscious fall varieties and then the winter apples that shall cheer many a long evening. Besides there are peaches, pears, plums and cherries. To think that these are all to be had by a little effort, and yet there are farm after farm that never have them. There is no place that life can be made more abundant and enjoyable than on the farm, and yet how seldom are the possibilities realized.

But it is not alone for the farmer to enjoy amateur horticulture, the merchant, the professional man or the day laborer may, although he have but a few feet of ground, spend many a delightful hour with his plants. The pleasure that may be derived from cultivating a small patch of ground with our own hands is surprising. But to get the most pleasure we must give it our personal attention and care. For some reason the

fruits and vegetables we raise taste better than those we buy. We know our own plants and trees as individuals, but when we buy these products in the open market they have lost their identity and become one of a throng, and when they lose their identity they lose their personal flavor. Instead of being apples of the tree by the gate they are just apples.

There is something purifying, invigorating and ennobling in the care of plants. Every man is more or less the result of environment and so largely is this true that certain things seem to be characteristic of certain work. I believe that intemperance and profanity is much more rare, among persons engaged in horticulture, than among persons that handle live stock for example.

But personal horticulture does not apply alone to the raising of fruits and vegetables. To my mind it has an even greater field in the matter of home adornment. For we may buy our fruits and vegetables, but we cannot buy the improvements that may be made about a home by a little judicious use of personal horticulture. The arrangement of the yard and lawn, the planting of ornamental shrubs and flowers may so transform a place as to make it almost unrecognizable. The cry may be made that there is no time for such trivial things as raising flowers. Of course, they will not satisfy an empty stomach as fruit and vegetables will. But they inspire the owner with more self-respect, they give a good impression to all who come and they make home what it ought to be—beautiful. Prof. Bailey, in speaking of personal horticulture, says "It will not die so long as hearts burn for the out of doors and souls long for beauty and for the solace of nearness to nature."

Among the poorer classes who have not been fortunate enough to own land, the work that has been done on what is familiarly known as the "potato patch"

plan has done much good, and there is room for much more work. Such work as the National Cash Register Company of Dayton is doing toward encouraging their workmen to plant flowers and vegetables, has transformed not only many a home, but the entire portion of the city in which their factory is located. Personal horticulture is a fascinating recreation for the mind fatigued with a day's labor at intellectual work, or for the body exhausted by manual labor. Bryant has aptly expressed this thought in *Thanatopsis*:

"To him who in the love of nature
Holds communion with her more visible
forms,
She speaks a various language,
For his gayer hours she has a voice of
gladness, and a smile
And eloquence of beauty, and she glides
Into his darker musings, with a mild
And healing sympathy, that steals away
Their sharpness ere he is aware."

HOMER C. PRICE.

INVALID COOKERY.

During a severe illness the food, as well as the medicines, are prescribed by the physician. When the danger is over and you are left with an emaciated patient, his ultimate recovery depends more upon your knowledge of what food to give, when and how to give it, than the world wots of. "The original meaning of the word *nurse* was to nourish, and in spite of all the secondary meanings that it has acquired, the question of nourishment still remains one of primary importance."

Remember that your patient's digestion is as weak as the rest of his body, and that improper nourishment will do him much more harm than good.

If a patient cannot take a teacup full of some article of food every three hours, try a tablespoonful every hour; if

this will not do, a teaspoonful every quarter of an hour. If patients cannot eat solid food, give a spoonful of beef-tea, of arrowroot and wine, of egg flip every hour. This will give the requisite nourishment and prevent them from being too much exhausted to take, at a later hour, the solid food which is necessary for their recovery."

It is, however, a mistake to suppose that beef-tea is the most nutritive of all articles. The real fact is that there is barely a teaspoonful of solid nourishment to half a pint of water in beef-tea. Nevertheless it is a good stimulant for patients having inflammatory diseases; but should not be given as a substitute for food to convalescents, though it may well be taken with other foods. Beef-tea is both heating and aperient and therefore should not be given in cases of fever. In such instances whey should replace its use.

Another common error is to suppose that arrowroot has a special value as food for the sick. It is nothing but starch and water. Flour is much more nutritive and less liable to ferment in the digestive tract. As a vehicle for wine, as a restorative quickly prepared, arrowroot is valuable, but flour, barley and groats are much superior in food value to arrowroot, sago, tapioca and other foods of the same class.

Experiments performed in France proved that calves-foot jelly, which forms the gelatine of commerce, does not nourish. Wine jellies, blanc-mange and other dishes made with it are very appetizing, but the food value of the gelatine itself is infinitesimal.

Patients suffering from Bright's disease, diabetes, and many other similar diseases require a special diet, but as it is impossible here to take these up separately I shall simply indicate a few nourishing and easily digestible dishes for convalescents in general.

Convalescents as a rule should be well nourished to enable them to rep waste occasioned by the ravages of disease; but the old maxim of "feeding a cold and starving a fever" is now refuted by physicians. Dr. Oswald says: "There is no doubt but that by exercise alone a catarrh can gradually be worked off. A combination of the three specific, exercise, abstinence and fresh air, will cure the most obstinate cold.

GENERAL DIET FOR CONVALESCENTS.

BEVERAGES:

Water.

Tea and coffee (under certain circumstances).

Lemonade.

Apple-water.

Grape-juice.

MILK.

GRUELS.

CREAM.

COD-LIVER OIL.

SOUPS:

Broths, beef, chicken, mutton, oyster, and clams.

Fruit soups.

Vegetable soups.

EGGS.

FISH: White fish.

MEATS.

CEREALS:

Rice, barley, specially prepared cereals.

FRUITS.

VEGETABLES (potato only).

CUSTARD.

BEVERAGES.

Water: Wholesome drinks are more necessary to us all than most people realize. Good water is an absolute essential. If you must use city water, boil and, if possible, filter it; at least let it settle and strain off the top, then cool it; but do not use ice. A few sips at a time should be taken (as a medicine if necessary) a great many times a day by the invalid.

Tea: Let me quote from Florence Nightingale on the vexed question of tea: "I should be very glad if any of the abusers of tea would point out what to give instead of tea to an English patient after a sleepless night. If you give it at five or six o'clock in the morning the patient may even sometimes fall asleep after it and get, perhaps, his only two or three hours' sleep during the twenty-four. At the same time, you should never give tea or coffee to the sick, as a rule, after five o'clock in the afternoon. Sleeplessness in the early night is from excitement, generally, and is increased by tea or coffee; sleeplessness which continues from the early morning is from exhaustion, often, and is relieved by tea." After night sweats a drink of cold tea in the morning acts as a mild tonic. It seems almost superfluous to insist that tea is not a food! and yet I once visited a man in the last stages of consumption who was making his supper of bread and tea!

To make tea: Let *fresh* cold water come to a boil and pour it over tea leaves placed in an earthen teapot. Let the tea steep,—that is cover it and leave it in a warm place for a few minutes when it will be ready to serve. Never put it on the fire and let it boil, as this develops the tannin in the tea which is a poison soluble in boiling water.

Coffee: Coffee is a better restorative than tea, but a greater impairer of digestion.

Lemonade: Often when water tastes insipid, a lemonade will be gratefully taken, or a lemon ice hailed with joy. These should never be given after a meal, but on an empty stomach are refreshing and attended with no ill results. Miniature freezers holding about a cupful can now be bought and will be found invaluable in preparing dishes for an invalid.

The following recipe, as will be seen, is in just the proportion for one person:

LEMON ICE.

$\frac{1}{2}$ cup water.

Juice of 1 lemon.

$\frac{1}{4}$ cup sugar.

White of $\frac{1}{2}$ egg
beaten.

Prepare a lemonade of these ingredients and freeze. To make a more acid ice use 4 tablespoonfuls lemon juice.

Apple-water may also vary the monotony of plain water. Slice juicy sour apples into boiling water and keep warm an hour. Strain cool and sweeten if the patient prefers it so.

Grape-juice: No beverage, aside from water, is more generally wholesome and palatable than grape-juice. It is really a food since grapes contain 14.3 per cent. of the simplest sugar and some proteid. In a good many cases it is preferable to wine, since in this form one gets the natural tonic of the grape without the inflammatory effects of alcohol.

To make grape-juice, add a quart of water to three quarts of grapes which have been thoroughly washed and freed from the stems. Let them come slowly to the boiling point. Strain through a thick cloth. Return the liquid to the fire, let it again come to the boiling-point and turn at once into glass jars or bottles and seal at once. Use a porcelain-lined kettle and a wooden spoon in preparing the juice.

MILK.

Milk should be regarded not as a beverage, but as a food, as it becomes a solid after reaching the stomach. Heated it is not only nourishing but stimulating, and the diet on which most physicians fall back in emergencies. Milk diluted with one-third lime-water can be given in a tablespoonful dose every half hour, when no other food can be retained, and will sustain the patient till more

can be taken. Sometimes, if milk is distasteful to a patient, it may be made palatable by the addition of a little salt or of seltzer water, or any carbonated water. The carbonic acid in the latter acts as a stimulant to the stomach and nervous system, aids digestion and increases peristalsis. In cases of constipation, bicarbonate of soda may be used in milk. In cases of weakness of the bowels, the milk may be scalded with a stick of cinnamon to give it a pleasant flavor.

If milk disagrees, or is disagreeable to a patient, it may be made into a jelly and in this form is often liked.

PEPTONIZED MILK JELLY.

One pint peptonized milk (or ordinary milk may be used if lemon is omitted), heated to boiling.

$\frac{1}{4}$ lb sugar; $\frac{1}{2}$ box Knox's gelatine.

Juice of one lemon.

Juice of one orange.

Three or four tablespoonfuls of Jamaica rum.

Add the sugar to milk. Soak the gelatine up well in enough water to merely cover it; add a gill of boiling water, and when quite dissolved add the juices of the lemon and orange, and also the rum. Add this to the sweetened milk when it has partially cooled and pass it through a sieve. Pour into moulds and set in a cold place. Milk Gruels can be used as well as milk itself in making jelly.

A patient could take milk in no more digestible form than still warm from the cow. In that state it is already partly digested and can be very quickly absorbed. If milk is allowed to cool and is then heated, the stomach must perform the whole process of digestion, though it can even then do it with more ease than if the milk had been taken cold.

Gruels made very thin are wholesome and can be served in almost infinite

variety. They can almost always be taken if milk can, and are sometimes acceptable when milk is not.

Persons suffering from nervous diseases and chronic diseases such as consumption need fatty and oily articles of food. Cream and butter are the most easily digested of the animal fats. Cream and hot water can be digested when milk cannot and is as much of a tonic as beef-tea.

Cod-liver oil: In speaking of easily digested oily foods, cod-liver oil should not be overlooked. It is a real food, though usually considered as a medicine. Nothing is better for rapidly growing and undernourished children, or for consumptives.

SOUPS.

The ingenuity of the nurse is often taxed when a patient cannot take solid food. He must then rely on milk and broths. Beef broth is best. Chicken and mutton may also be used, but they need longer cooking than the beef. The following directions for preparing broth are taken from the American Kitchen Magazine: "Select the freshest meats. Do not wash. Split the bones and put them into a soup-pot with cold water and the meat. Let stand an hour. Heat and boil it up slowly to give the albumen time to dissolve in the liquid. It coagulates as soon as the liquid reaches 150° F., and rising to the surface brings with it all the impurities contained therein, which is called scum. Carefully remove this scum as quickly as it rises to the surface and before the liquid boils, for after that the scum partly dissolves and the rest of it precipitates and destroys the transparency of the broth. When the broth is well skimmed add salt and keep it boiling as continuously and slowly as possible to prevent too much evaporation. When done rice or barley, which has been

previously thoroughly cooked, may be added."

A change from broth may be made by broiling a steak and cutting it into inch pieces. The juice should then be pressed out with a heated lemon-squeezer into a hot cup and seasoned with salt.

Quail or squab or beef may be cut into small pieces and put, without water, into a double boiler and allowed to stand for several hours. At the end of that time all the juices will have oozed out and can be served as broth.

Mrs. Abel, in her Lomb prize essay, gives the following recipes for fruit soups:

"These may be made of almost any well flavored fruit, cooked soft, mashed and strained, and sufficient water added, with a little thickening sugar and spice; or rice cooked soft and rubbed through a sieve may be added, also the yolk of an egg. Soups may also be made of dried plums, prunes or dried sour cherries. Soak the fruit over night. If soup is made of a milder fruit, as pears, add a few sour apples to give flavor.

APPLE SOUP.

Four cups peeled and quartered apples cooked to a mush in a little water. 1½ pints water, with tablespoonful of cornstarch, thoroughly cooked together; 3 tablespoonful of sugar; ¼ tablespoonful cinnamon; a

CREAM OF POTATO SOUP.

(For one person.)

½ potato, medium size.

1-3 cup milk or white stock.

1-3 yolk of egg.

1 tablespoonful cream.

Salt and pepper.

Cook the potato in boiling salted water until soft. Drain and mash it and add the milk or stock. Press the mixture through a sieve, add the beaten yolk, the cream and seasoning. Cook

in a double boiler and stir constantly until the egg thickens. Serve immediately, as the soup curdles if allowed to stand.

EGGS.

Fresh eggs are easily digested, not so those which have been kept any length of time. Eggs are more digestible raw than cooked. In taking raw eggs it is better not to beat them as less air is thus taken. After a little practice a raw egg can be swallowed as easily as an oyster. If only part of an egg can be taken at a time, let it be the yolk, as that contains the fat and consequently more nourishment than the white. In convalescence it is desirable to take an egg or the yolk of an egg raw, two or three times a day. If the patient objects seriously to taking it alone, a little wine or milk may be given with it.

In cooking eggs be careful to do so with very moderate heat, as a temperature anywhere near the boiling point renders the white horny and quite unfit for anybody to eat.

CREAMY EGG.

$\frac{1}{2}$ egg.
 $\frac{1}{8}$ cup milk.
 $\frac{1}{8}$ teaspoonful salt.
 $\frac{1}{4}$ teaspoonful butter.
 Pepper.
 1 small slice of toast.

Beat the egg slightly and add the butter and seasoning. Scald the milk and pour it over the egg mixture. Return it to the double boiler. When the egg coagulates around the sides and bottom of the boiler scrape it away with a spoon. Continue in this way until only a small amount of liquid remains. If overheated it will curdle. Serve on toast.

FISH.

Any white fish is a nourishing and digestible food if served quite fresh and broiled or boiled. The other fishes are too rich in fat for weak stomachs.

MEAT.

The best meat is rare beef. A mutton chop or a bit of chicken may be served, but other meats should be avoided.

CEREALS.

Rice is a very good food and most easily digested of any cereal. A good way is to roast rice as you would coffee, cook as usual and serve with a little cream. In toast some of the starch of the bread is changed to dextrine, which is more easily digested than starch.

Barley if thoroughly cooked is excellent food for an invalid, but oatmeal is hard to digest and should not be given.

Mrs. Henderson, in her "Diet for the Sick," says: "The new methods of preparing cereals by the Health Food Company of New York have produced the most gratifying results. These foods are of inestimable value to the invalid or indeed to anyone. The Health-Food Company manufacture, besides flour with its full richness of gluten, coarser preparations of the cereals, such as granulated wheat, oats, barley, corn, and others with the skin removed."

FRUITS.

Stewed fruits without the addition of any sugar are very wholesome and beneficial for almost any one. They should be served in some form every day, provided a laxative diet is not at the time objectionable. Baked apples served with cream and sugar are a standard dish for the sick-room. They are digestible, laxative and very wholesome.

Juices of fruits may be used as a flavor for drinks; but the pulp should be discarded as it contains more or less of an indigestible fibre called cellulose.

Raw fruit of course contain this same fibre and are therefore a tax on a delicate stomach.

VEGETABLES.

The same objection made to the pulp of fruits applies to nearly all vegetables. A potato—(and that baked; but cooked in no other way) is the only one of them, except asparagus, really fit for a weak stomach.

CUSTARDS.

If a sweet dish is desired one of the many custards may be taken without any ill effect.

BOILED CUSTARD.

Two cups scalded milk; yolks of 3 eggs; one-fourth cup sugar; one-third teaspoon salt; flavor with wine. Beat eggs slightly, add sugar and salt, stir constantly while adding gradually the hot milk. Cook in double boiler, and continue stirring until mixture thickens and a coating is formed on the spoon; strain immediately; chill and flavor.

Dobree in "Manual of Home Nursing," gives some rules for the nurse.

1. The nurse should observe the likes and dislikes of her patient; but of course should not let him have anything forbidden by the doctor.

2. Punctuality in all things is an essential.

3. Quiet should be maintained during meals. Everything in the room should be in order before the meal begins.

4. Food should be prepared out of sight of the patient and presented without any questions being asked about it.

5. Food should be given in small quantities.

6. The best white linen and silver should be used on the tray and everything should be very neat and inviting. Colored flowers embroidered on a tray cloth used in a sick-room are objectionable because it cannot then be boiled.

A small sugar bowl and creamer make a tray look more attractive. If you cannot afford one of the bed tables which swing across the bed, one may

be made by putting four short legs on a board and curving the board slightly inward in front. A narrow rim running round three sides of this board will prevent things slipping off. Either of these will make the serving of a meal to a patient in bed much more of a pleasure than it otherwise would be.

HELEN G. SHELDON.

THE PEACH TREE BORER.

The Peach Tree Borer belongs to the Lepidoptera or Butterfly family, and is distinctly an American insect, being first recorded by Kahn in 1749. At various times since then it has been spoken of as a dangerous insect, and as early as 1850 it became a serious menace to the peach growing industry in America east of the Rocky mountains. Like all moths and butterflies this insect passes through four stages during its life. The larvae or borer hatches from the egg and passes the winter in this stage. The full-grown larvae hibernate in their burrows and the younger ones build a cocoon-like structure from the gummy exudations and sawdust.

About May 1 the borer usually awakens from its hibernating period and begins burrowing. Openings are excavated in the inner bark and sapwood, varying in size from one to one and a half inches in diameter. This injury is confined to the stem or root a few inches above or below the surface of the soil. In most of the northern states the borers probably attain their full growth in most years by June 5. It then leaves its burrow under the bark and forms about itself a cocoon composed of gum excrements and particles of bark. The capsule thus formed is about an inch in length, and has an elongated oval form slightly pointed at either end. It is usually attached to the bark of the tree at or near the surface of the soil. Within

this cocoon the borer soon sheds its skin and is transformed into an entirely different looking creature known as the pupa. The change usually requires from three to five days. The male and female pupa are easily distinguished, the female being longer and having only one row of spines across the back of the seventh abdominal segment, while there are two rows in the male. When nearly mature, the female is distinguished from the male by the dark orange color, which is assumed by the fourth and fifth abdominal segments. The duration of this stage varies from eight days to three weeks at the end of which time the pupa cracks open the cocoon by means of the beak-like organs on its head and gradually works itself out. After a rest of fifteen or twenty minutes it is ready for active flight. In appearance the adult is quite peculiar, resembling a wasp on account of its clear wings and bright colors. These characteristics are more noticeable in the male, which is strikingly different from the female. The latter is of a steel blue color with a satiny lustre interrupted on the fourth and fifth segments by orange bands. The front wings are scaled and opaque, while the back wings are smooth and transparent.

The adult moths may copulate very soon after emerging from the pupa stage and egg laying begin within three or four hours. If the eggs are not fertilized by the male within twenty-four hours the female deposits them unfertilized, in which case they are sterile. Between six and seven hundred eggs have been counted in a single female. One of these insects has been observed to deposit more than twenty eggs in different parts of the trunk of a tree in less than an hour. The eggs are deposited singly and stuck to the surface of the bark on their sides by a gummy secretion. The young larvae which hatch out in seven or eight

days are at first very active and have long, stiff bristles on their bodies. They do not at once bore into the bark but seek a crack into which they can crawl for shelter. Here they feed on the inner bark until they go into hibernation for the winter.

In combating this insect it is necessary to note its natural enemies. Among others we find the *Ichneumon* fly and the *Brachanoid* fly, both of which are parasitic on either the larva or pupa.

For nearly half a century American peach growers have been fighting this pest, but to all appearances nothing definite has been accomplished, although numerous remedies have been suggested and tried. Perhaps the best method is that of digging out or mounding. Protection of the lower trunk is often attempted, but this works injury to the bark. Hot water, carbon bisulphid and numerous other washes, such as crude petroleum, printers' ink, etc., have been tried, but without success. The general conclusion arrived at by the experimentalists is that the borer can only be controlled in thrifty well-cultivated trees, where the larva may be dug out with a sharp instrument. H. C.

THE CULTURE OF AMERICAN GINSENG.

The subject of growing ginseng has recently received so much attention from the agricultural press of the country and from circulars and pamphlets sent broadcast throughout the country by dealers, that hundreds of people are being induced to try its culture.

Many of the articles are written by people who have no personal knowledge of the best way to grow it or of the profits to be derived thereby. Others are written by dealers who have seeds and plants to sell, and in both instances as a rule the information is second-

hand and unreliable. The most extravagant figures are given showing enormous yields produced on a given acreage, and Monte Cristo fortunes to be made out a paltry investment while one loaf in the back yard watching the gold dollars sprouting.

Certain dealers have sent out figures informing the public that \$5 invested in their seeds and plants will show a value of \$44,340 the fifteenth year.

A million dollar bed in twelve years from a \$1000 investment is advertised on another page. A value *which cannot be obtained* except perhaps in small quantities, is placed on the seeds and young plants and the ratio of increase and loss is given very accurately and more extravagantly *on paper*. Can any of these versatile writers please inform us how turnips can be grown on a \$5 investment in twelve years, the price the roots and seeds will bring each year, and how rich a man will be at the end of that period? Certainly not, and information pretending to figure it out would be absolute nonsense.

An article on ginseng, entitled, "Valuable Farm Land," appeared in the St. Louis Republic a short time ago and was extensively copied by other papers in the South and Southwest. Among other wild statements the writer said that seeds brings five cents each (another writer says there is unlimited demand at twenty-five cents each), and yearling roots at twenty cents each; that the eighth year an acre should produce 3,120,000 seeds which sell at five cents each, giving an annual income to the fortunate grower of \$100,000 from the seeds alone. He further states: "Say that a full crop of seed from one acre is available for planting. That will be 3,120,000 seeds. Allow for the loss and failure to generate say 120,000 seed. This will leave 2,000,000 seed that are prac-

tically sure to generate and create 2,000,000 roots. In eighteen months these roots will be ready for market, and can be sold direct to consumers, the present price being 20 cents each, or a total of \$400,000 from the ginseng crop in eighteen months. This crop of 2,000,000 roots would require a space of approximately forty acres. One acre should produce 52,000 roots, which at the market price of 20 cents each, should, after eighteen months, bring a return of \$10,400."

Could anything be more baldly ridiculous. Let us suppose that only 1000 gardeners had the above success as to yield. This would mean over three billion seeds put on the market each year, which at five cents each would require \$150,000,000 annually to pay for them, not to mention the value of the roots.

Suppose further that the ratio of increase both in yield of crops and number of growers continued the same for twenty-five years there would not be money enough in the world to buy a single year's crop. China, the source of demand for ginseng, would have used all their wealth in its purchase long before the period of twenty-five years had elapsed; notwithstanding these air castles there is an enormous profit in growing the plant, but it depends on the individual grower, as in any other crop. The right conditions for its culture must be supplied, either naturally or artificially, and intelligent cultivation given. There will probably always be a good demand for the root at high prices, and it is an article commanding cash at all times.

These conditions for growing are readily found in nearly all the States of the Union, or can be produced at reasonable cost of labor and material. They may be stated in a few words: A rich,

deep, well-drained, and moist soil, containing abundant decayed vegetable matter and not too heavy or clayey. Humus or vegetable mold, obtained by using decayed forest leaves, is extremely beneficial, as is also thoroughly rotted compost. Shade sufficient to keep off the direct rays of the sun is almost necessary, particularly in sections where the heat is excessive. Add to this careful cultivation and you have the secret, if there really be any, of growing ginseng successfully. Lath covers are perhaps the best artificial shade, and apple trees have been found good to keep the ground protected from the sun. At maturity the roots must be carefully and properly prepared for market, and the extra care taken to produce a fine article, clean, well graded and perfectly dry is more than repaid by the much higher price such roots will bring.

The writer, who has had many years of experience growing this root will be glad to give fuller information as to the best modes to be used in its cultivation, but would warn the reader against the wildly extravagant articles that appear from time to time and which will damage rather than help an industry that really does promise unusual returns for the labor and expense necessary to cultivate it successfully.

HARLAN P. KELSEY.

Tremont Bldg., Boston.

The managers of the first International Live Stock Exposition held in Chicago last December, encouraged by their splendid success, have decided to make the exposition a permanent event. Announcement of the second annual exposition has already been sent to all parts of the civilized world so that the breeders and feeders may have ample time to prepare their exhibits.

The live-stock department of the Pan-American Exposition will have 120 acres allotted to it and will be capable of accommodating 25,000 head of stock.

The dairy wing of the new agricultural building at the University of Illinois is nearly completed and much of the machinery has already been put in place. The creamery department will have a 35-horse power engine.

NEW BOOKS.

FIRST PRINCIPLES OF AGRICULTURE.

By Edward B. Voorhees, A. M. Director of the New York Experiment Station and Professor of Agriculture in Rutgers College. Silver, Burdett & Co., Chicago. 12 mo, 212 pp., cloth. Introductory price, 72 cents.

This is practically the first text-book that has met the need of the times for teaching the principles of agriculture in rural communities. Professor Voorhees' experience, both as a practical farmer and as a teacher, led him to believe that the theory and the application of agricultural science could be successfully taught, not only in colleges, but in the country district schools. To state, in logical order, the elementary principles of scientific agriculture, and to show the relation of these facts to farm practice, was the purpose of his book, which was so wisely planned and formulated that prominent agriculturists and teachers of the science have been alike unstinted in their praise.

Of the subjects treated may be mentioned: the composition and improvement of soils; natural manures; artificial and concentrated manures; fertilizers; the rotation of crops; the selection of seed; farm crops and their classification; market-garden crops; the growth of animals, their constituents; the character and composition of fodders and feeds, and their digestibility and nutritive value; the principles of breeding,

the pure breeds of farm stock; the products of the dairy, their character and management.

These and kindred topics are discussed with a conciseness that makes every line tell, and a comprehensiveness that omits nothing of vital importance. Valuable statistical tables and a good index ably supplement the text.

LANGSTROTH ON THE HIVE AND HONEY BEE. Revised, completed and published by Chas. Dadant & Son, Hamilton, Ill. 520 pp., fully illustrated.

Neither time nor money has been spared by the revisers to produce a book worthy of the original author who is the father of American Agriculture, and who did more than any other man toward making bee-keeping both pleasurable and profitable.

The first part of the book is devoted to the anatomical structure and life history of the bee. The subject of feeding, handling and rearing is then taken up and considered quite fully. Throughout the book the subject is treated in the thoroughly scientific manner yet it is couched in such plain language and accompanied by so many explanatory drawings that it may be read intelligently by any one possessing an ordinary education. The book is now in the fifth edition of the revision and is one that we do not hesitate to commend to any one who is interested in bee-keeping, either for pleasure or for profit.

THE UNITED STATES IN THE ORIENT. The Nature of the Economic Problem. By Chas. A. Conant. Houghton, Mifflin & Co., Boston and New York.

The chapters of this book originally appeared as magazine articles, at intervals during the past two years, in the North American Review, The Forum and the Atlantic Monthly. The author discusses our present position in the

Orient from a purely economical standpoint, passing the ethical and political aspect of the subject with a brief allusion in the preface. The articles present the subject in a forcible manner and make out a very strong argument in favor of the present attitude of the United States in regard to expansion and the opening of the eastern markets for our surplus products.

MOORE'S METEOROLOGICAL ALMANAC AND WEATHER GUIDE. By Willis L. Moore, Chief of the U. S. Weather Bureau. Rand, McNally & Co., Chicago. Paper, 25 cents; cloth, 50 cents.

The object of this little book is to present in a concise form such weather data and facts as will be of interest and profit to all those whose avocation depends upon the condition of the weather. Prof. Moore has endeavored to correct many popular but erroneous opinions in regard to climate and weather and to give such scientific facts as will be of direct value to the farmer, shipper or pleasure seeker. The Almanac fills a distinct want and a copy should be in the hands of every farmer.

THE FOUNDATIONS OF BOTANY. By Joseph Y. Bergen, A. M., Instructor in Biology, English High School, Boston. Grim & Co., Boston. 670 pages. Illustrated.

In writing this new book the author has followed the same plan as in his Elements of Botany which was issued some years ago. The most of the chapters have been rewritten and enlarged and some of the more important discussions have been given separate chapters. The flora which accompanies the text contains a good description of nearly seven hundred species of plants. These plants have been chosen with considerable care so as to include those that have a wide territorial range and that bloom sometime during the latter part of the school year. The book is

well adapted to the needs of a high-school course in botany, as it allows the teacher considerable option as regards the kind and amount of work which he shall present to his class.

THE DARLINGTONS. By Elmore Elliott Peake. McClure, Phillips & Co., New York. Price, \$1.50.

A story is centered, not about the life of an individual, but of an entire family. They live in a small town and control the only railroad, the father being the president, his son traffic manager and his daughter the auditor of accounts. The unjust prejudices so often entertained against the rich by the poor and less fortunate is faithfully set forth. The characters are true representatives of American life and the romance of the book is most natural and delightful. The story is undoubtedly one of the best of the year and eminent critics have pronounced it to be the most American novel that has appeared for many years. It is one of those books that one is loath to put down until the story is finished.

WITH RING OF SHIELD. By Knox Magee. R. F. Fenno & Co., New York. Cloth, illustrated. Price, \$1.50.

A tale of court life and adventure, told in the first person by a knight in the time of Richard III., long after his battles are over. The book is full of thrilling battle scenes and tournament contests interspersed with courtly, graceful love making. The scenes are all well drawn and the story intensely interesting from beginning to end. The book contains practically all of the play of Shakespeare's Richard the Third, but the plot is centered elsewhere and the time covered is slightly longer.

STRINGTOWN ON THE PIKE. By John Uri Lloyd. Dodd, Meade & Co., New York. Cloth, illustrated. Price, \$1.50.

An intensely interesting story of Ken-

tucky life during the Civil War. The events of the story are all foretold by "Old Cupe," an old slave, by means of "nigger signs," but this by no means detracts from the interest of the story. As a love story the book will be a failure to many, but the characters portrayed, such as the Judge, "Old Cupe" and the Parson are such as will live in the mind of the reader for many years. The illustrations of the book are of the finest, being full page and taken from actual photographs. If you want to meet some interesting characters and get a vivid picture of mountain life in Kentucky forty years ago, read Stringtown on the Pike.

BURPEE'S FARM ANNUAL FOR 1901. "Quarter-Century" Edition. Published by W. Atlee Burpee & Co., Philadelphia.

This is a comprehensive little book of 220 pages, besides four colored plates, showing the leading novelties in vegetable and flower seeds, together with directions for their culture, taken from the most recent notes at Fordhook Farms.

Every one who gardens either for pleasure or profit will certainly be delighted with this catalogue, containing as it does so much new and trustworthy information. While too costly a book to send free, it is mailed for ten cents together with a fifteen-cent packet of either Luther Burbank's Floral Novelty, or the new dwarf Burpee's "Quarter-Century" Tomato. In this way the catalogue really costs nothing, but Messrs. Burpee & Co. publish another catalogue of ninety pages, entitled "SEED-SENSE," which is mailed entirely free.

The Ontario Agricultural College at Guelph, Canada, has received a gift of \$40,000 for the purpose of erecting an agricultural building. The money is donated by the trustees of the late H. A. Massie, and the building is to be known as "Massey Hall and Library."

